Chapter 2 Project Alternatives

This chapter describes the project alternatives developed and analyzed in this Environmental Assessment/Draft Environmental Impact Report (EA/DEIR). It includes a description of the process used to develop alternatives, a detailed description of the alternatives analyzed, a description of the alternatives considered and withdrawn, and a summary of project costs and schedule.

2.1 Alternatives Development Process

Highway 101 is the primary transportation corridor in Sonoma County. As outlined in Chapter 1, Purpose of and Need for Project, Highway 101 has been the subject of transportation planning and engineering studies over the past 20 years. These studies conclude that the transportation issues in this corridor require a multi-modal solution.

The Highway 101 HOV Lane Widening Project is one of several projects within the corridor that address the highway component of the needed transportation improvements. This project would widen Highway 101 between Steele Lane in Santa Rosa and Windsor River Road–Old Redwood Highway in Windsor from four to six lanes by constructing a new high occupancy vehicle (HOV) lane in each direction and making a series of related highway operations and safety improvements.

The alternatives development process began with a detailed survey of existing conditions within the project limits, identification of purpose and need for this project, and determining what would be required to successfully address the defined purpose and need. The alternatives being considered in this EA/DEIR are the recommendation of these studies; the purpose of the environmental analysis is to evaluate these alternatives in detail. In June 2003, studies were formally initiated on the project and the alternatives were presented to the public for their comments on factors that should be considered in the development of the project.

Several alternatives were considered and withdrawn from further consideration as described in Section 2.3, Alternatives Considered and Withdrawn. These included an additional mixed-flow lane alternative, a transit/transportation system management (TSM) alternative, and several variations on the Build Alternative. The mixed-flow lane and transit/TSM alternatives were withdrawn from further consideration prior to detailed study, for the reasons presented in Section 2.3, Alternatives Considered and Withdrawn. The variations on the Build Alternative were investigated in more detail and focused on improvement of traffic operations.

Alternative geometric concepts were developed to address traffic operations issues at the Fulton Road/Airport Boulevard Interchange Complex, and several design variations were investigated for auxiliary lane combinations in the southbound direction at the Hopper Avenue and Mendocino Avenue on-ramps. Before developing the interchange concepts, criteria for their evaluation were established and agreed upon by the Project Development Team (PDT), a multidisciplinary technical advisory team assembled specifically for this project. The PDT includes representatives from the

Federal Highway Administration (FHWA), the California Department of Transportation (Caltrans), the Sonoma County Transportation Authority (SCTA), local agencies, and the consultant team.

Interchange concepts were developed and evaluated according to the criteria summarized below:

- Would the design alleviate congestion, improve safety, and encourage carpooling and the use of alternative travel modes?
- Would the interchange meet current state design standards?
- Would traffic operations improve?
- How feasible would it be to construct the interchange, maintain traffic during construction, and maintain the interchange after construction?
- What was the potential for environmental impacts?
- What would be the right-of-way costs and impacts?
- What would be the costs of construction?

The PDT used the evaluation criteria to determine which were the most viable concepts that should be developed in greater detail and included in the Build Alternative. The No-Build and Build Alternatives are discussed in Section 2.2.2, No-Build Alternative, and Section 2.2.3, Proposed Project (Build Alternative). The conceptual alternatives developed and evaluated but withdrawn from further study are described in Section 2.3, Alternatives Considered and Withdrawn.

2.2 Project Alternatives

This section presents the two alternatives under consideration in this environmental analysis and begins with a description of existing conditions.

2.2.1 Existing Conditions

Within the project limits, Highway 101 consists of two mixed-flow lanes in each direction with a median that is primarily unpaved. There are no auxiliary lanes within the project limits except between Steele Lane and Bicentennial Way.

The mixed-flow lanes are 3.65 meters (m) (12 feet [ft]) wide. The outside shoulders are 2.4 m (8 ft) and the inside shoulders are 1.5 m (5 ft) wide, with 0.6 m (2 ft) paved width. From the south project limit to north of Mendocino Avenue, the median is 11.0 m (36 ft) wide, paved, and has a concrete median barrier separating opposing directions of traffic. For the remainder of the project limits, the median is 14.0 m (46 ft) wide, is unpaved, and has a guard rail barrier in the median to separate opposing directions of traffic. The area is generally flat with grades typically less than one percent except at the Steele Lane and Windsor River Road–Old Redwood Highway Overcrossings, which have grades up to three percent.

The highway has eight interchanges within the project limits: Bicentennial Way, Mendocino Avenue, Hopper Avenue, Mark West Springs Road–River Road, Fulton Road, Airport Boulevard, Shiloh Road and Windsor River Road–Old Redwood Highway. The interchanges at Mark West Springs Road-River Road, Shiloh Road and Windsor River Road–Old Redwood Highway provide for all movements. The remaining interchanges provide only partial access. The Steele Lane interchange is just south of the project limits. None of the freeway on-ramps within the project limits is metered.

The highway has six roadway/pedestrian crossings and three waterway bridges within the project limits. Most of these were built when the freeway was constructed. The Bicentennial Way Overcrossing was added later, and the River Road, Fulton Road and Airport Boulevard Overcrossing structures were retrofitted in 1996. These structures are summarized from south to north in Table 2.2-1, Bridges and Crossings. The Steele Lane and Windsor River Road–Old Redwood Highway roadway/pedestrian crossings are just beyond the project limits to the south and north, respectively.

Table 2.2-1: Bridges and Crossings

Name	Kilometer Post (Post Mile)	Bridge Number	Construction Date	Type	Notes
Bicentennial Way	36.2(22.52)	20-257	1979	Overcrossing – Four span	
Mendocino Avenue	36.7 (22.81)	20-179	1962	Overcrossing – Four span	
River Road/Mark West Springs Road	40.0 (24.86)	20-199	1962	Overcrossing – Four span	Seismic retrofit in 1996
Fulton Road	41.7 (25.9)	20-200	1962	Overcrossing – Four span	Seismic retrofit in 1996
Mark West Creek	42.0 (26.1)	20-180 R/L	1962	Bridge – Five span	
Airport Boulevard	42.4 (26.33)	20-201	1962	Overcrossing – Five span	Seismic retrofit in 1996
Pruitt Creek	44.1 (27.39)	20-181 R/L	1962	Bridge – Three span	
Shiloh Road	44.5 (27.62)	20-202	1962	Overcrossing – Four span	
Pool Creek	45.0 (27.97)	20-182 R/L	1962	Bridge – Three span	

Source: Parsons 2005.

The local street network provides alternate routes of travel parallel to and along the east side of Highway 101 along Mendocino Avenue and Old Redwood Highway.

2.2.2 No-Build Alternative

The No-Build Alternative offers a basis of comparison with the Build Alternative in the opening year 2010 and the future analysis year of 2030. This alternative would provide the same lane configuration as currently exists between Steele Lane and Windsor River Road.

The No-Build Alternative consists of currently planned and/or programmed improvements to the highway. This includes four other Highway 101 HOV lane widening projects in Sonoma County as follows:

- Highway 12 to Steele Lane and Steele Lane Interchange Improvements (Fully Funded)
- Rohnert Park Expressway to Santa Rosa Avenue, including Wilfred Avenue Interchange
- Old Redwood Highway to Rohnert Park Expressway
- Marin-Sonoma Narrows[1]

These projects are described in Section 1.3.3, Related Projects.

2.2.3 Proposed Project (Build Alternative)

The Highway 101 HOV Lane Widening Project would widen Highway 101 for approximately 12.3 km (7.6 mi) from its current four lanes to six lanes by adding one HOV lane in each direction from just north of Steele Lane in Santa Rosa to Windsor River Road–Old Redwood Highway in the Town of Windsor. The project also would provide auxiliary lanes, interchange modifications and ramp improvements. At the southerly limit, the project would be configured to conform to improvements proposed under the Steele Lane Interchange Improvements Project (by others). The northerly project limit marks the end of the planned HOV system, as described in Section 1.3.1, Project History.

The proposed project is described in terms of mainline and interchange improvements. Most of these improvements can be accommodated within the existing right-of-way; however, acquisition of additional right-of-way would be required at the Fulton Road / Airport Boulevard Interchange Complex, under each interchange option. See Section 3.2.1.4, Environmental Consequences (Land Use). Plans depicting the Build Alternative are included in Appendix A.

2.2.3.1 Mainline Improvements

The proposed project would add one high occupancy vehicle (HOV) lane in each direction, thus widening the freeway from four to six lanes. The 6.6-m (22-ft) median would accommodate a 3.0-m (10-ft) wide shoulder in each direction and a median barrier separating each direction of traffic. The freeway mainline alignment would generally be widened symmetrically about the existing alignment except at the southerly conform, where the alignment would be shifted to the west to conform with the proposed Steele Lane Interchange improvements. The vertical alignment would typically follow the existing profile.

These improvements would be designed to be consistent with current highway geometric standards: travel lanes would be 3.6 m (12 ft) wide, inside shoulders would be 3 m (10 ft) wide, and outside shoulders would be 3 m (10 ft) wide. Achieving these geometric standards would require widening along the existing outside edges of the traveled way (but within the existing right-of-way) in most

[1] Note that the Marin-Sonoma Narrows project is not anticipated to start construction until 2010; therefore, it is not included in the No-Build conditions in the opening year proposed project comparison. The Marin-Sonoma Narrows Project is included in the No-Build conditions in the future analysis year (2030) proposed project comparison.

locations. The roadway cross section would be essentially the same as in the recently reconstructed segment of Highway 101 from Wilfred Avenue to SR 12. Auxiliary lanes would be provided in certain locations to improve weaving and merging operations: the existing auxiliary lanes between the Steele Lane and Bicentennial Way interchanges would be maintained; and auxiliary lanes would be added at the Mendocino Avenue and Hopper Avenue southbound on-ramps as discussed in Section 2.2.3.2, Interchange Improvements. A concrete barrier with a chain link fence would separate Cleveland Avenue from the auxiliary lanes between Mendocino Avenue and Hopper Avenue. On the horizontal curve in the vicinity of Hopper Avenue, the northbound inside shoulder would be widened to provide standard stopping sight distance to the median barrier. At the northerly project limit, the HOV lanes would end just south of the Windsor River Road–Old Redwood Highway Undercrossing, and the highway would transition from six lanes to the existing four lanes. Maintenance vehicle pullouts would be provided at intervals along the highway at the outside shoulders, where possible.

Three bridges would be modified to accommodate the mainline improvements. At Mark West, Pruitt, and Pool Creeks, the existing parallel bridges carrying Highway 101 would be widened into the median and joined, and widened to the outside to provide standard shoulder widths. No additional right-of-way is anticipated for these bridge modifications.

2.2.3.2 Interchange Improvements

The proposed project includes a series of interchange modifications to improve safety and operations and to conform to the mainline widening. These modifications would upgrade the interchanges to current geometric standards, where possible. All interchange on-ramps would be improved to accommodate future ramp metering. This would include California Highway Patrol (CHP) enforcement areas; HOV preferential treatments at southbound on-ramps at the Bicentennial Way, Hopper Avenue, River Road, Airport Boulevard, Shiloh Road diagonal on-ramp, and Windsor River Road–Old Redwood Highway and at the diagonal northbound on-ramps at Mendocino Avenue and Airport Boulevard; and additional mixed-flow lanes to meet ramp metering storage requirements. While the decision to implement ramp metering would not be made as part of this project, these ramp metering improvements would be constructed as part of the current project to minimize disruption and facilitate future implementation. CHP enforcement areas could be used by maintenance vehicles during non-peak traffic periods. The following interchange improvements are included in the proposed project:

Bicentennial Way – At the Bicentennial Way Interchange, the southbound on-ramp would be reconfigured to conform with the widened Highway 101, widened to include an HOV preferential lane and two mixed-flow lanes, and regraded to improve the existing vertical alignment. A retaining wall would be constructed at the westerly edge of pavement, adjacent to Cleveland Avenue. The northbound off-ramp would be improved to provide a two-lane exit, with one lane each dedicated to the eastbound and westbound directions.

Mendocino Avenue – The southbound on-ramp would be reconfigured to conform with the widened Highway 101 and to include a 300-m (990-ft) auxiliary lane to improve merging operations. The northbound hook on-ramp would be widened to include an HOV preferential lane and two mixed-flow lanes.

Hopper Avenue – The existing southbound Highway 101 on-ramp would be widened to include a new HOV preferential lane, one mixed-flow lane, a CHP enforcement area, and a 300-m (990-ft) auxiliary lane to improve merging operations.

Mark West Springs Road–River Road – The interchange on-ramps would be reconfigured to improve the entrance tapers and widened to provide space for CHP enforcement areas. Both southbound on-ramps would be widened to accommodate one mixed-flow lane and an HOV preferential lane. In addition, the southbound off-ramp would be reconfigured to provide standard deceleration distance, and the intersection with River Road would be signalized.

Fulton Road and Airport Boulevard – Large-scale interchange improvements are proposed at the Fulton Road/Airport Boulevard Interchange Complex to correct operational deficiencies resulting from the close spacing 0.64 km (0.4 mi) of the two interchanges. The close spacing of the existing interchanges coupled with high mainline volumes and high volumes entering and exiting the freeway results in reduced travel speeds in the existing condition (see Figures 3.1-3, 3.1-4). Travel speeds would continue to degrade if no improvements would be constructed (see Figures 3.1-9 and 3.1-10 for the 2030 No-Build Alternative) and southbound mainline congestion would back up to Windsor River Road (see Figure 1.2-2).

Two configurations are under consideration in each of the northbound and southbound directions and are described independently in the following paragraphs as Northbound Options A and B and Southbound Options A and B. For convenience, these are presented together in the Build Alternative Plan Drawings on Sheets 9A through 12A and 9B through 12B, but it should be noted that either northbound option could be combined with either southbound option.

All options at this interchange would be designed to accommodate the future widening of Fulton Road and Airport Boulevard, anticipated as local projects (by others) within the near-term planning horizon.

- **Northbound Option A –** An auxiliary lane would be added between the Fulton Road on-ramp and the Airport Boulevard off-ramp to improve weaving operations between the two ramps and provide a two-lane exit to Airport Boulevard. The existing collector-distributor (CD) road system for the Airport Boulevard ramps would be abandoned together with the northbound loop on-ramp from eastbound Airport Boulevard, which would be replaced with a left-turn to the northbound diagonal ramp at a new signalized intersection. The diagonal on-ramp would be widened to accommodate an HOV preferential lane. The Fulton Road off-ramp would be improved to provide standard deceleration distance. This option would require widening the existing Highway 101 bridge over Mark West Creek by 3.0 m. See Figure A, Sheets 9A through 12A of 16, in Appendix A.
- **Northbound Option B –** The existing Airport Boulevard CD road system and loop ramps would be replaced with a two-lane diagonal off-ramp, passing over Mark West Creek on a new two-lane bridge to a new signalized intersection on Airport Boulevard. The Airport Boulevard eastbound to northbound movement would be accommodated by a left turn to the northbound diagonal on-ramp, which would be widened to provide an HOV preferential lane and two mixed-flow lanes. The existing Fulton Road loop on-ramp would be closed to accommodate the new Airport

Boulevard diagonal off-ramp and auxiliary lane. The Fulton Road off-ramp would be improved to provide standard deceleration distance. See Figure A, Sheets 9B through 12B of 16, in Appendix A.

- **Southbound Option A** – The existing Airport Boulevard on- and off-ramps and Fulton Road off-ramp would be replaced with a new two-lane Airport Boulevard off-ramp leading to a one-way frontage road to Fulton Road and a slip on-ramp to Highway 101. All traffic destined for Fulton Road would exit at Airport Boulevard, pass through a new signalized intersection, and follow a new two-lane, one-way road to join the existing Fulton Road off-ramp at a new signalized intersection on Fulton Road. The Airport Boulevard slip on-ramp would accommodate an HOV preferential lane and two mixed-flow lanes. The Fulton Road loop on-ramp would be improved to meet current acceleration taper standards. The two-lane off-ramp would require an auxiliary lane on the mainline from south of Pruitt Creek. Two new bridge crossings of Mark West Creek would also be required. See Figure A, Sheets 9A through 12A of 16, in Appendix A.
- **Southbound Option B** – A braided ramp configuration would replace the existing ramp configuration between Airport Boulevard and Fulton Road. The braided ramp configuration would locate the off-ramp to Fulton Road before the on-ramp from Airport Boulevard in the direction of travel. The on-ramp would pass over the off-ramp on a structure wide enough to accommodate an HOV preferential lane and two mixed-flow lanes. The Fulton Road off-ramp would travel along much of the existing off-ramp alignment and would intersect Fulton Road at a new signalized intersection north of the existing ramp intersection. This ramp braid configuration would require two new bridge crossings of Mark West Creek. Under this option, the off-ramp to Airport Boulevard and the Fulton Road loop on-ramp would be improved to meet current standards for deceleration and acceleration. See Figure A, Sheets 9B through 12B of 16, in Appendix A.

The southbound braided ramp (Option B) combined with either of the northbound options would operate better than the southbound slip ramp (Option A) from both the mainline and intersection operations perspectives. The southbound slip ramp (Option A) would require all southbound traffic exiting Highway 101 to travel through the intersection at Airport Boulevard and would operate at LOS C as compared to LOS A with the southbound braided ramp option.

The northbound diagonal off-ramp (Option B) would operate better and provide greater operational flexibility from a mainline operations perspective than the northbound loop off-ramp (Option A) because the weaving movement between the interchanges is eliminated. The northbound loop off-ramp (Option A) would provide for better intersection operations than the northbound diagonal off-ramp (Option B) because the Fulton Road northbound loop on-ramp is retained and thereby reduces the amount of traffic required to travel through the Airport Boulevard-Fulton Road intersection.

Shiloh Road – At this interchange, the on-ramps would be reconfigured to bring acceleration tapers to current standards, and the southbound Highway 101 on-ramp from eastbound Shiloh Road would be widened to provide space for a new HOV preferential lane and CHP enforcement area.

Windsor River Road–Old Redwood Highway – The southbound on- and off-ramps would be reconfigured to conform with the widened Highway 101 cross section. The southbound Highway 101

on-ramp would be widened to accommodate two mixed-flow lanes, a new HOV preferential lane, and CHP enforcement area.

2.3 Alternatives Considered and Withdrawn

2.3.1 Mixed-Flow Lane Alternative

A Mixed-Flow Lane Alternative was considered and withdrawn from further consideration because HOV lanes and not mixed-flow lanes are consistent with the project purpose identified by the initiating agencies since the beginning of project planning. HOV lanes increase capacity while encouraging carpooling and transit use to mitigate against the impacts of increasing travel demand. As discussed in Section 1.3.1, Project History, there have been more than 20 years of planning for improvements along Highway 101, including several studies that have focused on HOV lanes. Two of the most recent studies are the Metropolitan Transportation Commission's (MTC) *A High-Occupancy Vehicle Lane Master Plan Update for the San Francisco Bay Area* (DKS Associates, 2003) and the SCTA's *Comprehensive Transportation Plan for Sonoma County* issued in 2004.

The HOV Master Plan Update identified HOV lane alternatives as having superior air quality and mobility benefits, both locally and regionally. The Master Plan Update also documented that HOV lanes are an effective measure for carrying more people per lane than mixed-flow lanes. In Marin County to the south, HOV lanes carry three times the number of people per lane as the mixed-flow lanes. The SCTA's Comprehensive Transportation Plan identifies HOV lanes as a recommended measure to reduce congestion by reducing the number of cars using Highway 101 and making ridesharing a more attractive travel alternative. For these compelling public policy reasons, the Mixed-Flow Lane Alternative was withdrawn from further study as it was not consistent with planning for the Highway 101 corridor or with local agency goals.

2.3.2 Transit/Transportation Systems Management Alternative

A combination of Transit and Transportation Systems Management (TSM) strategies as a "stand alone" alternative was considered and withdrawn from further consideration early in the evaluation process. This alternative envisioned increased bus transit service and HOV use to consolidate traffic into fewer vehicles, to increase throughput without increasing capacity. This alternative would have been a lower-cost alternative to new construction; however, the alternative would not have been able to meet the project's purpose and need without additional capacity to accommodate buses and other HOVs on Highway 101. To make the TSM Alternative into a viable alternative would require mainline capacity increases to enable buses and HOVs to bypass congestion−in short, HOV lanes would be required. Without HOV lanes, the Transit/TSM alternative is not a viable alternative and was therefore withdrawn from further consideration.

2.3.3 Variations on the Build Alternative

Preliminary traffic studies indicated that the short weave distance between the Fulton Road and Airport Boulevard interchange ramps, coupled with high forecast volumes of weaving traffic –

particularly southbound between the Airport on- and Fulton off-ramps – would result in less than acceptable traffic operations on the mainline unless modifications were made. A number of interchange alternatives were therefore considered at the Fulton Road/Airport Boulevard Interchange Complex to address operational deficiencies on either a near-term basis, deferring more comprehensive improvements to a future project, or a long-term basis that would accommodate traffic operations in the 2030 design year.

Three basic design concepts were investigated for the Fulton Road/Airport Boulevard Interchange Complex, with a number of schematic design options developed for each, in both the northbound and southbound directions. The options were then evaluated by the PDT, with the recommendation that the conceptual interchange alternatives described below be withdrawn from further study and the remaining alternatives, comprising two interchange configurations for each of the northbound and southbound directions, be developed into full options (described in Section 2.2.3.2, Interchange Improvements, as Northbound and Southbound Options A and B). On April 12, 2004, these concepts were presented to the Sonoma County Transportation Authority Board of Directors, who concurred with the findings and direction of the PDT. All of the conceptual interchange alternatives developed, evaluated, and withdrawn from further study are described in this section along with the reasons for their withdrawal from further study.

2.3.3.1 Minimum Interchange Improvements

This design concept would have made the minimum possible improvements to the interchanges to address only near-term operational deficiencies. These improvements would be designed and constructed to be compatible with long-term improvements to be implemented in a future project (by others). An auxiliary lane would have been added in both the northbound and southbound directions between the two interchanges. The existing Highway 101 bridges over Mark West Creek would have been widened to accommodate the auxiliary lanes. This alternative was recommended in the Project Study Report for the project.

In the southbound direction, the weave between the Airport Boulevard on-ramp and Fulton Road off-ramp would be improved by these facilities in the near-term, but would fail under 2030 forecast traffic volumes, leading to mainline queues as far back as Windsor River Road–Old Redwood Highway. In addition, the southbound improvements were not considered compatible with a long-term solution, and were therefore withdrawn from further study.

In the northbound direction, however, the auxiliary lane was found to operate satisfactorily, due in part to constraints south of the project limits that would not allow the forecast demand volumes to arrive at the location. The northbound improvements were therefore included in the proposed Build Alternative as Northbound Option A.

2.3.3.2 Increase Weave Length

This alternative consists of adding auxiliary lanes in the northbound and southbound directions, while reconfiguring or closing existing ramps to increase the weave distance available between the two interchanges.

In the northbound direction, the concept would close the eastbound to northbound loop ramp at Airport Boulevard, eliminate the existing collector-distributor roadway system, and reconfigure the Airport Boulevard loop off-ramp exit further north of the existing exit. A signalized intersection would allow eastbound and westbound traffic on Airport Boulevard to use the existing diagonal on-ramp to Highway 101. A variation would improve the weave further by closing the Fulton Road loop on-ramp.

In the southbound direction, the weave distance would be increased either by reconfiguring the Fulton Road ramps as a loop off-ramp and diagonal on-ramp on the south side of Fulton Road; reconfiguring the Airport Boulevard on-ramp as a loop ramp on the north side of Airport Boulevard (requiring replacement of the overcrossing structure to accommodate an auxiliary lane); or a combination of the two.

Although the northbound concept would operate satisfactorily, it was withdrawn from consideration as it could not accommodate a two-lane off-ramp to Airport Boulevard and was therefore not as advantageous as another alternative that better addressed Highway 101 traffic operations.

Traffic operations in the southbound direction under this concept would fail in the design year even with the maximum weave length option, and so these alternatives were withdrawn from further consideration.

2.3.3.3 Eliminate Weave

This alternative would satisfy operational needs through the design year by reconfiguring the interchange ramps to eliminate the problematic weave.

In the northbound direction, the design concept would replace the loop off-ramp to Airport Boulevard with a new diagonal ramp and close the Fulton Road loop on-ramp. This concept was recommended for further evaluation in the Project Study Report and was selected for further evaluation as Northbound Option B.

In the southbound direction, three concepts were considered. A "split diamond" configuration would reconfigure all the southbound ramps to provide a single southbound off-ramp at Airport Boulevard, a one-way frontage road between Airport and Fulton Road, and a single diagonal on-ramp from Fulton. Under this configuration, all traffic destined for Fulton Road would pass through a signalized intersection on Airport Boulevard, and all Highway 101 traffic from Airport Boulevard would pass through a signalized intersection on Fulton Road. Because of the high volumes passing through the intersections and the potential for backup onto the mainline, this concept was not as advantageous as another alternative that better addressed Highway 101 traffic operations and was dropped from further consideration.

The second and third alternatives were carried forward as Southbound Option A and Option B and are described in Section 2.2.3.2, Interchange Improvements.

2.4 Project Costs

The No-Build Alternative would require capital investment for ongoing operations and maintenance costs and the costs of the other programmed transportation improvements. The Build Alternative would in addition require funds for construction, right-of-way acquisition, and agency costs for the current project. With the options under consideration at the Fulton Road/Airport Boulevard Interchange Complex, total costs are estimated to range between $133.0 and $136.4 million with construction costs from $104.7 to $106.4 million, right-of-way acquisition costs from $1.3 to $2.3 million and environmental mitigation costs from $0.41 to $0.52 million in 2006 dollars. Costs for final design, construction management, and agency costs are estimated to range from $26.6 to $27.3 million (Table 2.4-1).

Table 2.4-1: Costs for Highway 101 Improvements– Steele Lane to Windsor River Road (2006 $)

Cost Item	Base Project ($)	Fulton Road/Airport Boulevard Interchange Complex[1]			
		Northbound		Southbound	
		Option A ($)	Option B ($)	Option A ($)	Option B ($)
Roadway Items	95,562,000	1,652,000	1,740,000	4,016,000	3,324,000
Structure Items	1,232,000	173,000	726,000	2,063,000	3,790,000
Subtotal Construction	96,794,000	1,825,000	2,466,000	6,079,000	7,114,000
Right-of-Way	432,000	113,000	860,000	729,000	1,034,000
Environmental Mitigation[2]	125,000	105,000	155,000	240,000	175,000
Subtotal	97,351,000	2,043,000	3,481,000	7,048,000	8,323,000
Design, construction management, and agency costs.	24,338,000	511,000	870,000	1,762,000	2,081,000
PROJECT COST	121,689,000	2,554,000	4,351,000	8,810,000	10,404,000
TOTAL PROJECT COST RANGE:		**$133,052,875**	**to**	**$136,444,125**	

Notes:

[1] Four options under consideration at the Fulton Road/Airport Boulevard Interchange Complex. Refer to Section 2.2.3.2, Interchange Improvements for a description of these design options.

[2] Environmental mitigation costs are provisional pending agency consultation.

Source: Parsons 2006.

2.5 Project Schedule

The schedule for the proposed project anticipates environmental approval in 2007; design, utility relocation and right-of-way acquisition work beginning in 2007; and construction beginning in 2009 with completion by 2011.